WORKING MATERIALS

NO. LQ 1.75

PRELIMINARY PLANS
FOR
PROJECTING
PRODUCTIVE CAPACITY
OF THE
U.S. FARM SUBSECTOR

National Economic Analysis Division

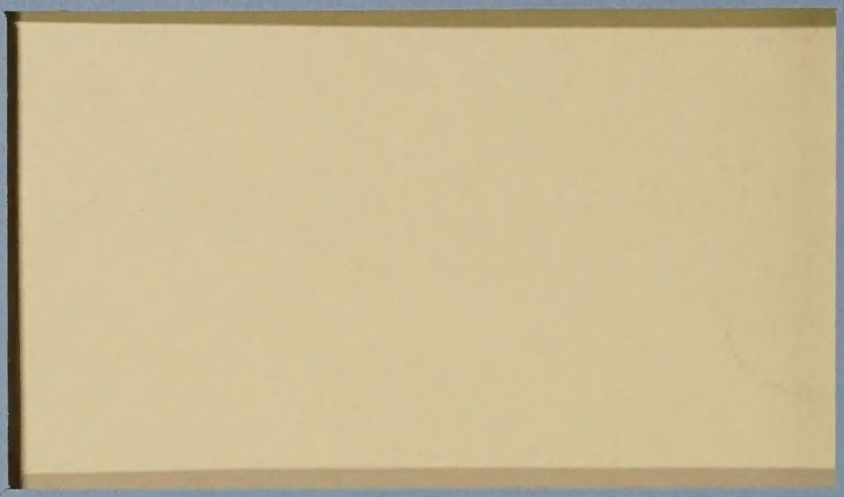
ECONOMIC PROJECTIONS PROGRAM

RESEARCH POLICY PLANNING

ERS

Economic Research Service

U.S. Department of Agriculture



NO. LQ 1.75

PRELIMINARY PLANS FOR PROJECTING PRODUCTIVE CAPACITY OF THE U.S. FARM SUBSECTOR

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LEROY QUANCE

FOR

REVIEW

BY THE

ADMINISTRATOR'S

PLANNING TEAM

ECONOMIC RESEARCH SERVICE
U.S. DEPARTMENT OF AGRICULTURE
WASHINGTON, D.C.
JANUARY 31, 1975

IN THE 1973 ERS STUDY, FARM SUBSECTOR PRODUCTION CAPACITY WAS REGARDED AS THAT QUANTITY OF AGRICULTURAL PRODUCTS THAT COULD BE PRODUCED BY 1980 TO 1985 UNDER PRICES FAVORABLE FOR PRODUCTION AND UNDER CONDITIONS THAT ALL REQUIRED INPUTS WILL BE READILY AVAILABLE. 1/ IT WAS BASICALLY AN EXERCISE OF (1) ADDING TO THE CROPLAND BASE THE ADDITIONAL ACRES THAT NRED DETERMINED COULD READILY COME INTO CROP PRODUCTION, (2) ASSUMING NORMAL OR EXISTING CROPPING PATTERNS ON THE ADDITIONAL ACREAGE, (3) OBTAINING THE ADDED PRODUCTION FROM THE EXPANDED CROPLAND BY MULTIPLYING BY SINGLE-VALUED YIELD PROJECTIONS FOR THE MAJOR COMMODITIES, (4) PROJECTING LIVESTOCK NUMBERS WITH CONSIDERATION FOR FEED GRAIN AND ROUGHAGE REQUIREMENTS, (5) PROVIDING SOME NATIONAL AND REGIONAL JUDGEMENT AS TO THE REASONABLENESS OF THE PROJECTIONS, AND (6) SUMMARIZING THE STUDY VERY NICELY IN THE FARM INDEX.

1/ "AMERICAN AGRICULTURE: ITS CAPACITY TO PRODUCE," THE FARM INDEX, VOL. 12, NO. 12, DECEMBER 1973.

ECONOMIC PROJECTIONS PROGRAM — RESEARCH — POLICY — PLANNING — ERS	TITLE: THE 1973 ERS PRODUCTIVE CAPACITY STUDY		
	SUBJECT: PRODUCTIVE CAPACITY	DATE: 1/30/75	ILLUSTRATION NO: 1

BASIC LIMITATIONS OF THE 1973 PRODUCTIVE CAPACITY STUDY INCLUDE:

1. INADEQUATE CONCEPTUALIZATION AND DEFINITION OF PRODUCTIVE CAPACITY;
2. INSUFFICIENT EVALUATION OF THE POTENTIAL FOR CONVERTING ADDITIONAL LAND IN THE CONSERVATION NEEDS INVENTORY TO CROP USE OR OTHER NATURAL RESOURCE DEVELOPMENT;
3. NO ANALYTICAL LINKAGE WITH COMMODITY AND AGGREGATE FARM OUTPUT SUPPLY (PRICE) RELATIONSHIPS;
4. ALMOST NO CONSIDERATION FOR POSSIBLE CHANGES IN TECHNOLOGY, INFLATION OR OTHER COST OF PRODUCTION CONSIDERATIONS THAT COULD RESULT FROM ENVIRONMENTAL AND ENERGY CONSIDERATIONS;
5. INADEQUATE ATTENTION WAS GIVEN REGIONAL RESOURCE AND PRODUCTION CONSIDERATIONS; AND
6. PRODUCTIVE CAPACITY PROJECTIONS WERE NOT RELATED TO THE DEMAND OR NEED FOR FARM OUTPUT IN EITHER A SCARCITY OR EXCESS CAPACITY SENSE.

SEVERAL ACTIVITIES ARE UNDERWAY THAT WILL EXPAND ERS CAPABILITY TO OVERCOME THESE LIMITATIONS.

ECONOMIC PROJECTIONS PROGRAM
RESEARCH — ERS — POLICY PLANNING

TITLE : LIMITATIONS OF THE 1973 ERS PRODUCTIVE CAPACITY STUDY

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	2

QUESTION: HOW CAN ERS IMPROVE THE 1973 PRODUCTIVE CAPACITY PROJECTIONS?

GENERAL PROCEDURE: AS WITH ANY COMPREHENSIVE ANALYSIS OF THE U. S. FOOD AND FIBER'S FUTURE, AN ADDITIVE AND COMPREHENSIVE SIMULATION SYSTEM SUCH AS THE DEVELOPING ERS NATIONAL-INTERREGIONAL AGRICULTURAL PROJECTIONS (NIRAP) SYSTEM IS NEEDED. COMBINING THE CAPABILITY OF THE NIRAP SYSTEM WITH IMPROVED CONCEPTUALIZATION OF PRODUCTIVE CAPACITY, THE USE OF SCENARIO BUILDING, PROFESSIONAL JUDGMENT OF APPROPRIATE ERS PROJECTION TEAMS AND UTILIZING THE TALENTS OF INTERESTED UNIVERSITY ECONOMISTS WILL PROVIDE PRODUCTIVE CAPACITY PROJECTIONS WITH SPECIFIC LINKAGES WITH IMPORTANT QUESTIONS RELATING TO PRODUCTIVE CAPACITY AND PROJECTIONS THAT ARE VERY USEFUL IN COMMODITY PROGRAM AND RESOURCE DEVELOPMENT POLICY ANALYSIS.

ECONOMIC PROJECTIONS PROGRAM — RESEARCH — E R S — POLICY — PLANNING

TITLE: IMPROVING ERS'S PROJECTIONS OF THE FUTURE FARM SUBSECTOR PRODUCTIVE CAPACITY

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	3

ACADEMIC ECONOMISTS ARE ALSO DISPLAYING THE CURRENT INTEREST IN THE FUTURE PRODUCTIVE CAPACITY OF THE U. S. FARM SUBSECTOR. HEINZ SPIELMANN UNIVERSITY OF HAWAII, ON A ONE YEAR SABBATICAL WITH ERS (SECTOR PERFORMANCE MEASURES, NEAD), IS PREPARING A STAFF REPORT ON CAPACITY MEASUREMENT IN THE AGRICULTURAL AND NON-AGRICULTURAL SECTORS; GEORGE BRADOW, PENNSYLVANIA STATE UNIVERSITY, IN HIS 1974 ANNUAL AAEA TEXAS MEETINGS, CHOSE PRODUCTIVE CAPACITY AS THE TOPIC FOR HIS FELLOW ADDRESS; AND LUTHER TWEETEN, OKLAHOMA STATE UNIVERSITY, HAS EXPRESSED A DESIRE TO WORK COOPERATIVELY WITH ERS IN CONDUCTING A PRODUCTIVE CAPACITY STUDY. BILL MANLEY HAS AGREED FOR NEAD TO FINANCE A TWO MONTH TOUR FOR LUTHER TWEETEN TO BE IN WASHINGTON, D. C., (JUNE AND JULY, 1975) TO WORK WITH THE ECONOMIC PROJECTIONS PROGRAM IN THE ANALYSIS PHASE OF OUR PRODUCTIVE CAPACITY RESEARCH PLANS. ALSO, HEINZ SPIELMANNWILL BE HERE THROUGH MOST OF THE SUMMER AND HAS EXPRESSED A DESIRE TO WORK IN THIS EFFORT. ANOTHER POSSIBILITY IS TO PURCHASE A FEW RUNS OF THE CARD LP SYSTEM UNDER APPROPRIATE SCENARIOS IN WHICH ALL AVAILABLE LAND RESOURCES WOULD BE PERMITTED TO COME INTO CROP PRODUCTION WITH THE CRITERION FUNCTION OF MAXIMIZING FARM OUTPUT. THIS WOULD ADD A NORMATIVE PERSPECTIVE TO THE POSITIVISTIC PROJECTIONS PROVIDED BY THE NIRAP SYSTEM.

ECONOMIC PROJECTIONS PROGRAM
RESEARCH PLANNING POLICY
E R S

TITLE :
UNIVERSITY COOPERATION

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	4

QUESTION: HOW CAN WE IMPROVE THE CONCEPTUALIZATION OF PRODUCTIVE CAPACITY RESEARCH AND SETTLE ON MORE PRECISE AND MORE WIDELY ACCEPTED DEFINITIONS RELATING TO PRODUCTIVE CAPACITY?

GENERAL

PROCEDURE: AS HEINZ SPIELMANN APTLY DOCUMENTS, A VIABLE AND GENERALLY ACCEPTED DEFINITION OF PRODUCTIVE CAPACITY IN AGRICULTURE DOES NOT EXIST. AND AS PART OF ERS'S RESEARCH EFFORTS CONCERNING PRODUCTIVE CAPACITY, WE SHOULD FOLLOW UP ON SPIELMANN'S EFFORTS, SELECTING AN APPROPRIATE SET OF CONCEPTS AND/OR DEFINITIONS WITH RESPECT TO PRODUCTIVE CAPACITY. 1/ BUT FOR PURPOSES OF OUR PRELIMINARY PLANS, THE FOLLOWING DEFINITIONS ARE USED:

PRODUCTIVE CAPACITY: THAT LEVEL OF COMMODITY AND/OR AGGREGATE FARM OUTPUT THAT WOULD BE PRODUCED UTILIZING ALL CROPLAND PROJECTED AS AVAILABLE IN AN ALTERNATIVE FUTURE UNDER THE SPECIFIED SCENARIO.

EXCESS PRODUCTIVE CAPACITY: THAT PRODUCTIVE CAPACITY IN EXCESS OF MARKET QUANTITIES OF COMMODITIES AND/OR AGGREGATE FARM OUTPUT PROJECTED UNDER THE SPECIFIED SCENARIO, TO INCLUDE OUTPUT THAT COULD HAVE BEEN PRODUCED ON DIVERTED ACRES IN THE EVENT THERE ARE PRODUCER OR PUBLIC INITIATED DIVERSIONS.

1/ Spielmann, Heinz. Capacity Measurement in the Agricultural and Non-Agricultural Economic Sectors - A Literature Review, ERS Staff Paper, Preliminary, not for publication, January, 1975.

ECONOMIC PROJECTIONS PROGRAM — RESEARCH — POLICY — PLANNING — ERS

TITLE: CONCEPUTALIZATION AND DEFINITION OF PRODUCTIVE CAPACITY

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	5

ISSUE: CAPACITY OF THE U.S. FARM SUBSECTOR TO PROVIDE FOOD AND FIBER IN THE INTERMEDIATE AND LONG-RANGE FUTURE

QUESTIONS:

(1) WHAT IS THE LIKELY PHYSICAL CAPACITY FOR AGGREGATE AND MAJOR COMMODITY FARM OUTPUT UNDER THE PROJECTED AGRICULTURAL BASELINE?

(2) HOW WILL THE PROJECTED PHYSICAL CAPACITY VARY UNDER SCENARIOS DIFFERING FROM THE BASELINE WITH RESPECT TO TECHNOLOGICAL CHANGE, RESOURCE DEVELOPMENT, COST OF PRODUCTION AND/OR POSSIBLE ENVIRONMENTAL AND ENERGY CONSTRAINTS?

(3) WHAT IS THE IMPACT OF ADVERSE WEATHER ON PRODUCTIVE CAPACITY?

(4) WHAT IS THE EXPECTED PHYSICAL PRODUCTIVE CAPACITY IN EXCESS OF MARKET CLEARING QUANITIES AND UNDER WHAT SUPPLY-DEMAND CONDITIONS WILL THIS EXCESS PRODUCTIVITY CAPACITY BE:

(A) SO LARGE THAT PRICE DEPRESSING STOCKS ACCUMULATE, AND NET FARM INCOME FALLS BELOW SOCIALLY ACCEPTABLE LEVEL?

(B) SO SMALL THAT SEVERE UPWARD PRESSURE IS PLACED ON FOOD AND FIBER PRICES AND THE U.S. CAPABILITY FOR EXPANDING FARM COMMODITY EXPORTS IS HINDERED?

ECONOMIC PROJECTIONS PROGRAM — RESEARCH — POLICY — PLANNING — ERS

TITLE: FARM SUBSECTOR PRODUCTIVE CAPACITY IN AN INTERMEDIATE AND LONG RANGE PERSPECTIVE

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1./29/75	6

QUESTION: WHAT IS THE LIKELY PRODUCTIVE CAPACITY FOR AGGREGATE AND MAJOR COMMODITY FARM OUTPUT UNDER THE PROJECTED AGRICULTURAL BASELINE?

GENERAL PROCEDURE: UNDER THE PROJECTED AGRICULTURAL BASELINE, EITHER BY SCENARIO DEFINITON OR BY COMPONENT PROJECTIONS, THE ATTRIBUTES OF RESOURCE DEVELOPMENT, TECHNOLOGICAL CHANGE, FERTILIZER USE, CROP YIELDS, FEED-LIVESTOCK CONVERSION RATIOS AND OTHER DETERMINANTS OF PRODUCTIVITY AS WELL AS COMMODITY AND AGGREGATE FARM OUTPUT PRICE RESPONSE (SUPPLY FUNCTIONS) WILL BE DETERMINED. THEN, ASSUMING 1969 AGRICULTURAL CENSUS CROPPING PATTERNS (ALSO ASSUMED IN THE BASELINE), THE PRODUCTIVE CAPACITY WILL BE DERIVED IN EACH STATE AND AGGREGATED TO FOUR GENERAL REGIONS AND TO THE UNITED STATES. UTILIZING THE COMMODITY, AGGREGATE COMMODITY AND AGGREGATE FARM OUTPUT PRODUCTION INDEXES FROM THESE CAPACITY CALCULATIONS, THE COMMODITY AND AGGREGATE FARM OUTPUT SUPPLY FUNCTIONS WILL BE USED TO DETERMINE AT WHAT PRICE LEVELS FARMERS WOULD ACTUALLY SUPPLY THESE QUANTITIES.

ECONOMIC PROJECTIONS PROGRAM — RESEARCH E R S POLICY PLANNING

TITLE: PHYSICAL CAPACITY FOR AGGREGATE AND MAJOR COMMODITY FARM OUPTUT UNDER THE PROJECTED AGRICULTURAL BASELINE

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	7

QUESTION: HOW WILL PRODUCTIVE CAPACITY VARY IN ALTERNATIVE FUTURES DIFFERING FROM THE BASELINE WITH RESPECT TO TECHNOLOGICAL CHANGE, RESOURCE DEVELOPMENT, COST OF PRODUCTION AND/OR POSSIBLE ENVIRONMENTAL AND ENERGY CONSTRAINTS?

GENERAL PROCEDURE: RECEIVING COUNCIL AND GUIDANCE FROM APPROPRIATE PROJECTION TEAMS AND PROGRAM AREAS, THE ALTERNATIVE FUTURES PROJECTION TEAM CAN DEFINE AN APPROPRIATE NUMBER OF PRODUCTIVE CAPACITY SUB-SCENARIOS DIFFERING FROM THE BASELINE WITH RESPECT TO TECHNOLOGICAL CHANGE, RESOURCE DEVELOPMENT, COST OF PRODUCTION AND/OR POSSIBLE ENVIRONMENTAL AND ENERGY CONSTRAINTS. THEN, FOLLOWING THE SAME PROCEDURES AS UNDER THE BASELINE CAPACITY PROJECTIONS, PRODUCTIVE CAPACITY CAN BE PROJECTED UNDER EACH SUB-SCENARIO AND COMPARED TO THE BASELINE CAPACITY PROJECTIONS TO PROVIDE ANALYSIS OF THE IMPACT OF THESE UNCERTAINTIES ON PRODUCTIVE CAPACITY.

ECONOMIC PROJECTIONS PROGRAM
RESEARCH — E — POLICY
— R —
PLANNING — S

TITLE: PRODUCTIVE CAPACITY SUB-SCENARIOS

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	8

QUESTION: HOW CAN ERS INCREASE ITS CAPABILITY FOR EVALUATING THE POTENTIAL FOR CONVERTING ADDITIONAL LAND IN THE CONSERVATION NEEDS INVENTORY TO CROP USE?

GENERAL

PROCEDURE: NRED IS MAKING GOOD PROGRESS IN THIS AREA.[1/] WORKING COOPERATIVELY WITH SCS, NRED HAS CLASSIFIED THE POTENTIAL FOR CONVERTING THE 264 MILLION ACRES NON-CROPLAND IN CLASSES I-III OF THE 1967 CONSERVATION NEEDS INVENTORY AS TO ITS HIGH, MEDIUM OR LOW POTENTIAL FOR CONVERSION TO CROP PRODUCTION IN BOTH THE SHORT AND LONG RUN. THEY ALSO HAVE SOME INDICATION AS TO WHETHER THE NATURE AND COST OF SUCH CONVERSION IS SUCH THAT INDIVIDUAL OWNER-OPERATORS WOULD INITIATE THE CONVERSION OR WHEATHER PUBLIC PROGRAMS WOULD BE REQUIRED. THIS INFORMATION CAN BE USED ON A STATE BY STATE BASIS TO SPECIFY PRODUCTIVE CAPACITY SUBSCENARIOS, DETERMINING CROPLAND AVAILABILITY AND THUS PRODUCTIVE CAPACITY IN THE SPECIFIED SCENARIO. PERHAPS NRED COULD PROVIDE SOME OWNER AND PUBLIC COST ESTIAMTES FOR VARIOUS CONVERSION PACKAGES. RESULTING DIFFERENCES IN EXCESS PRODUCTIVE CAPACITY, EXPORT CONSIDERATIONS AND NET FARM INCOME COULD THEN PROVIDE SOME INSIGHT AS TO WHETHER OWNER-OPERATIONS WOULD INITIATE SUCH CONVERSION AND/OR WHETHER THE PUBLIC SHOULD INITIATE APPROPRIATE RESOURCE DEVELOPMENT PROGRAMS.

1/ COTNER, MELVIN L., MELVIN D. SKOLD AND ORVILLE KRAUSE. LAND RESOURCE CAPABILITIES FOR U.S. FOOD PRODUCTION, PRESENTED AT A MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, NEW YORK, JANUARY 26-31, 1975

ECONOMIC PROJECTIONS PROGRAM — RESEARCH — POLICY — PLANNING — ERS

TITLE:
EVALUATING THE POTENTIAL FOR CONVERTING ADDITIONAL LAND TO CROP PRODUCTION

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	9

QUESTION: HOW CAN ERS ANALYZE THE IMPACT OF POTENTIAL CHANGES IN FARM SUBSECTOR PRODUCTIVITY AND UNPRECIDENTED TECHNOLOGIES ON PRODUCTIVE CAPACITY

GENERAL PROCEDURE: BASED ON DIFFERENT SCENARIO ASSUMPTIONS ABOUT THE RATE OF INCREASE IN PUBLIC EXPENDITURES FOR RESEARCH AND DEVELOPMENT IN AGRICULTURE, THE TECHNOLOGY COMPONENT OF THE NIRAP SYSTEM PROJECTS DIFFERENT PRODUCTIVITY INDEXES. THESE INDEXES BECOME TECHNOLOGY SHIFTERS IN THE CROP YIELD SIMULATOR, COMMODITY SUPPLY FUNCTIONS AND IN THE SUPPLY FUNCTION FOR AGGREGATE FARM OUTPUT. THE TECHNOLOGY SUB-SCENARIOS MAY ALSO INCLUDE SELECTED UNPRECIDENTED TECHNOLOGIES WITH AN ESTIMATED ADOPTION RATE AND IMPACT. INFORMATION ABOUT UNPRECIDENTED TECHNOLOGIES WAS RECENTLY OBTAINED BY ERS IN COOPERATION WITH OKLAHOMA STATE UNIVERSITY BY INTERVIEWING AGRICULTURAL SCIENTISTS IN ARS, CSRS, AND THE FEDERAL EXTENSION SERVICE. INFORMATION ON TIMING AND EXTENT OF IMPACT (INCLUDING ADOPTION RATES) WERE OBTAINED FOR EACH TECHNOLOGY.

ECONOMIC PROJECTIONS PROGRAM — RESEARCH ERS POLICY PLANNING

TITLE: PRODUCTIVE CAPACITY PROJECTIONS AND TECHNOLOGICAL CHANGE

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	10

* ENHANCEMENT OF PHOTOSENTHETIC EFFICENCY AND INHIBITION OF PHOTORESPIRATION
* BIOLOGICAL NITROGEN FIXATION
* CARTON DIOXIDE ENRICHMENT
* WATER AND FERTILIZER MANAGEMENT
* CROP PEST CONTROL STRATEGIES
* PROTECTED CULTIVATION
* MULTIPLE AND INTENSIVE CROPPING
* REDUCED TILLAGE
* PLANT GROWTH REGULANTS
* NEW CROPS
* BIOPROGRESSING
* ANTITRANSPIRANTS
* DEVELOPMENT OF PLANTS TO WITHSTAND DRAUGHT AND SALINITY
* TWINNING IN LIVESTOCK BIRTHS

ECONOMIC PROJECTIONS PROGRAM
RESEARCH POLICY PLANNING
E R S

TITLE :
CANDIDATES FOR UNPRECIDENTED TECHNOLOGIES

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	11

QUESTION: WHAT IS THE IMPACT OF ADVERSE WEATHER ON PRODUCTIVE CAPACITY?

GENERAL PROCEDURE: THE LU-KLINE AGRICULTURAL TECHNOLOGY SIMULATOR INCLUDES A STOCHOSTIC WEATHER IMPACT COMPONENT THAT GENERATES DEVIATIONS IN THE PROJECTED PRODUCTIVITY INDEX BASED ON THE BEST AND WORST WEATHER THAT HAS OCCURRED IN A SELECTED HISTORICAL PERIOD. POOR WEATHER INDUCED DEVIATIONS IN THE PROJECTED PRODUCTIVITY INDEX CAN FLOW THROUGH THE NIRAP SYSTEM UNDER THE BASELINE OR ANY PRODUCTIVE CAPACITY SUB-SCENARIO TO PROVIDE ONE MEASURED IMPACT OF WEATHER ON PRODUCTIVE CAPACITY.

ECONOMIC PROJECTIONS PROGRAM
RESEARCH — E R S — POLICY
PLANNING

TITLE:
IMPACT OF ADVERSE WEATHER ON PRODUCTIVE CAPACITY

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	12

QUESTIONS: WHAT IS THE EXPECTED PRODUCTIVE CAPACITY IN EXCESS OF MARKET CLEARING QUANTITIES AND UNDER WHAT SUPPLY-DEMAND CONDITIONS WILL THIS EXCESS PRODUCTIVE CAPACITY BE:

A. LARGE ENOUGH TO CAUSE PRICE DEPRESSING STOCKS AND NET FARM INCOME AT A LESS THAN PUBLICLY ACCEPTED LEVEL; OR,

B. SMALL ENOUGH TO CAUSE SEVERE UPWARD PRESSURE ON DOMESTIC FOOD AND FIBER PRICES AND HINDER THE UNITED STATES' CAPABILITY TO EXPAND FARM COMMODITY EXPORTS?

GENERAL PROCEDURE: THE PRODUCTIVE CAPACITY PROJECTED UNDER THE BASELINE OR UNDER ANY PRODUCTIVE CAPACITY SUB-SCENARIO CAN BE COMPARED TO THE MARKET QUANTITIES PROJECTED FOR ANY ALTERNATIVE FUTURE IN THE CORE PROGRAM (E.G. BASELINE, HIGH DEMAND OR LOW DEMAND) AND THE DIFFERENCE IS EXCESS PRODUCTIVE CAPACITY. ANALYSES OF THESE EXCESS PRODUCTIVE CAPACITY PROJECTIONS WILL PROVIDE USEFUL INFORMATION RELATIVE TO THE ABOVE QUESTION.

ECONOMIC PROJECTIONS PROGRAM — RESEARCH — POLICY — PLANNING — E R S

TITLE: EXCESS PRODUCTIVE CAPACITY

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	13

QUESTION: HOW CAN ERS PRODUCTIVE CAPACITY PROJECTIONS BE MADE MORE SENSITIVE TO INPUT-PRICE INFLATION OR OTHER COST OF PROUDCTION CONSIDERATIONS THAT COULD RESULT FROM ENVIRONMENTAL AND ENERGY CONSIDERATIONS?

GENERAL PROCEDURE: BOTH COMMODITY AND AGGREGATE FARM OUTPUT SUPPLY FUNCTIONS IN THE NIRAP SYSTEM HAVE INFLATION DETERMINED SHIFT FACTORS. THROUGH SCENARIO SPECIFICATION AND TRANSLATING HIGHER ENERGY PRICES AND COSTS OF ENVIRONMENTAL CONSTRAINTS INTO COST OF PRODUCTION, SUPPLY FUNCTIONS WILL SHIFT DIFFERENTLY UNDER DIFFERENT SCENARIOS AND THUS LEAD TO DIFFERENT PRODUCTIVE CAPACITY PROJECTIONS AND WILL PERMIT ANALYZING THE IMPACT OF THESE IMPORTANT UNCERTAINTIES ON PRODUCTIVE CAPACITY.

ECONOMIC PROJECTIONS PROGRAM
RESEARCH — POLICY — PLANNING
E R S

TITLE: IMPACT OF INFLAITON AND/OR OTHER COST OF PRODUCTION CONSIDERATIONS ON PRODUCTIVE CAPACITY

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	14

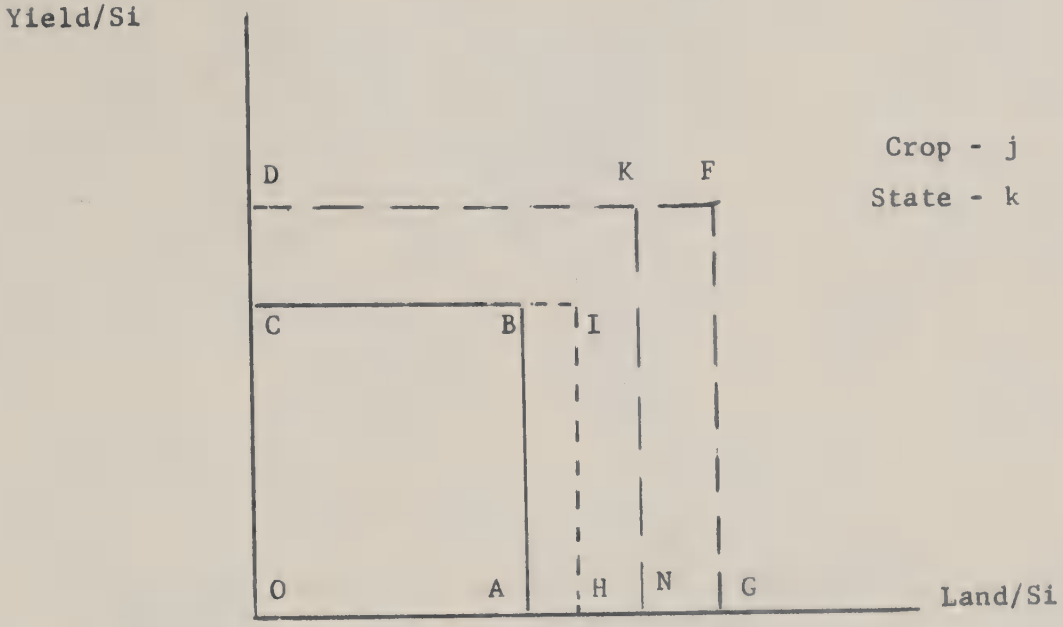
QUESTION: HOW CAN WE GET REGIONAL CONSIDERATIONS INTO ERS PRODUCTIVE CAPACITY PROJECTIONS?

GENERAL PROCEDURE: THE NIRAP SYSTEM GENERATES PRODUCTION AND LAND USE PROJECTIONS AT THE STATE LEVEL WHICH ARE THEN AGGREGATED TO FOUR BROAD REGIONS THAT ARE COMBINATIONS OF THE TEN FARM PRODUCTION ECONOMIC REGIONS. THIS SHOULD PROVIDE USEFUL REGIONAL CONSIDERATIONS. WE ALSO PROPOSE CREATING AN ERS REGIONAL AGRICULTURAL PROJECTIONS TEAM THAT WOULD EVALUATE PRODUCTIVE CAPACITY AND OTHER REGIONAL AGRICULTURAL PROJECTIONS FROM THE PARTICIPANTS' REGIONAL PERSPECTIVE.

ECONOMIC PROJECTIONS PROGRAM
RESEARCH E R S POLICY PLANNING

TITLE: REGIONAL PERSPECTIVE ON PRODUCTIVE CAPACITY PROJECTIONS

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	15



NOTE: PRODUCTION RELATIONSHIPS ARE PROJECTED INDIVIDUALLY FOR IRRIGATED AND NON-IRRIGATED CULTURAL PRACTICES AND AGGREGATED. ALSO, ALL PRODUCTION RELATIONSHIPS ARE CONSISTENT WITH THE ATTRIBUTES OF SCENARIO Si.

OABC = PRODUCTION OF CROP j IN STATE k IN YEAR t AND IS LESS THAN STATE k's PRODUCTIVE CAPACITY BECAUSE IT IS CONSTRAINED BY THE NATIONAL MARKET QUANTITY OF CROP j IN YEAR t

OHIC = PRODUCTIVE CAPACITY OF STATE k FOR CROP j IN YEAR t

AHIB = EXCESS PRODUCTIVE CAPACITY OF STATE k FOR CROP j IN YEAR t

HG = LAND AND WATER RESOURCE DEVELOPMENT PROJECTED FOR STATE j FROM YEAR t TO YEAR t+n

CD = YIELD INCREASE PROJECTED FOR CROP j IN STATE k FROM YEAR t TO YEAR t+n

OGFD = PRODUCTIVE CAPACITY OF STATE k FOR CROP j IN YEAR t+n

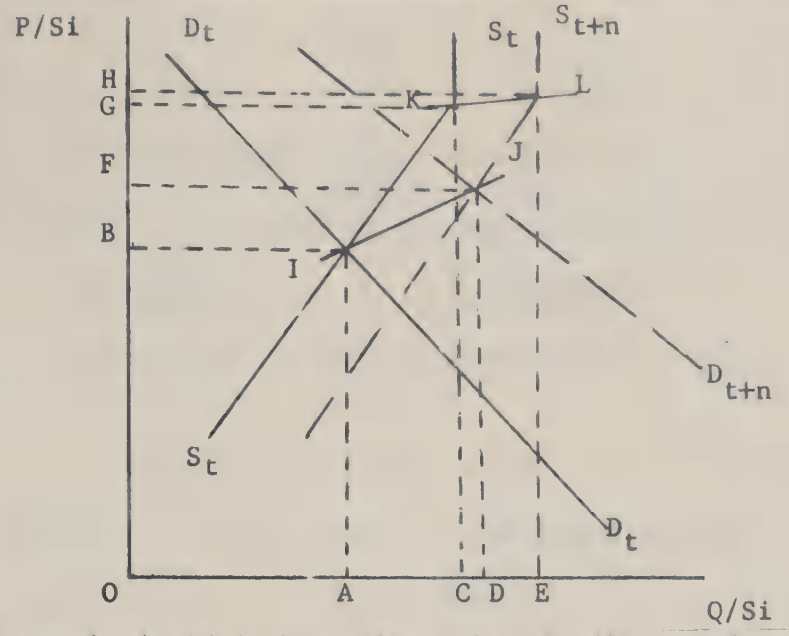
ONKD = PRODUCTION OF CROP j IN STATE k IN YEAR t+n

NGFK = EXCESS PRODUCTIVE CAPACITY OF STATE k FOR CROP j IN YEAR t+n

ECONOMIC PROJECTIONS PROGRAM — RESEARCH POLICY PLANNING — ERS

TITLE: THE STATE DISTRIBUTION OF PRODUCTION NIRAP COMPONENT

SUBJECT:	DATE:	ILLUSTRATION NO:
NIRAP SYSTEM	1/30/75	16



Si = Scenario i which determines the attributes of resource development, technological change, inflation and other supply shifters as well as demand shifters

OA = Market quantity in year t

OB = Price in year t

OC = Productive capacity in year t and results from all states fully utilizing its natural resources projected for year t under scenario i

OC = The market price that would have to prevail for producers to supply capacity output OC in year t

OD = Market quantity in year t+n

OF = Market price in year t+n

OE = Productive capacity in year t+1 and results from all states fully utilizing its natural resources projected for year t+n under scenario i

OH = The market price that would have to prevail for producers to supply capacity output OE in year t+n.

IJ = Adjustment path for the core or market simulation under scenario i from year t to year t+n

KL = Adjustment path for productive capacity simulation under scenario i from year t to year t+n

ECONOMIC PROJECTIONS PROGRAM — RESEARCH E R S POLICY PLANNING

TITLE: COMMODITY OR AGGREGATE FARM OUTPUT SUPPLY-DEMAND COMPONENT OF THE NIRAP SYSTEM

SUBJECT:	DATE:	ILLUSTRATION NO:
NIRAP SYSTEM	1/30/75	17

BECAUSE PRODUCTIVE CAPACITY IS OF SUCH INTENSE INTEREST ACROSS ERS AND IN ACADEMIC RANKS, WE PROPOSE A STEERING COMMITTEE, IN ADDITION TO THE INVOLVEMENT OF APPROPRIATE PROJECTION TEAMS, TO COUNCIL ON THE CONDUCT OF THIS IMPORTANT WORK. THIS STEERING COMMITTEE WOULD CONSIST OF THE FOLLOWING PERSONNEL:

LEROY QUANCE--CHAIRMAN (ERS COORDINATOR FOR PROJECTIONS)

ADMINISTRATOR'S OFFICE REPRESENTATIVE--

CED REPRESENTATIVE--COMMODITY AND POLICY CONSIDERATIONS

NRED REPRESENTATIVE--NATURAL RESOURCE CONSIDERATIONS

LUTHER TWEETEN--UNIVERSITY CONSULTANT AND PRINCIPLE REPORT WRITER

HEINZ SPIELMAN--UNIVERSITY CONSULTANT

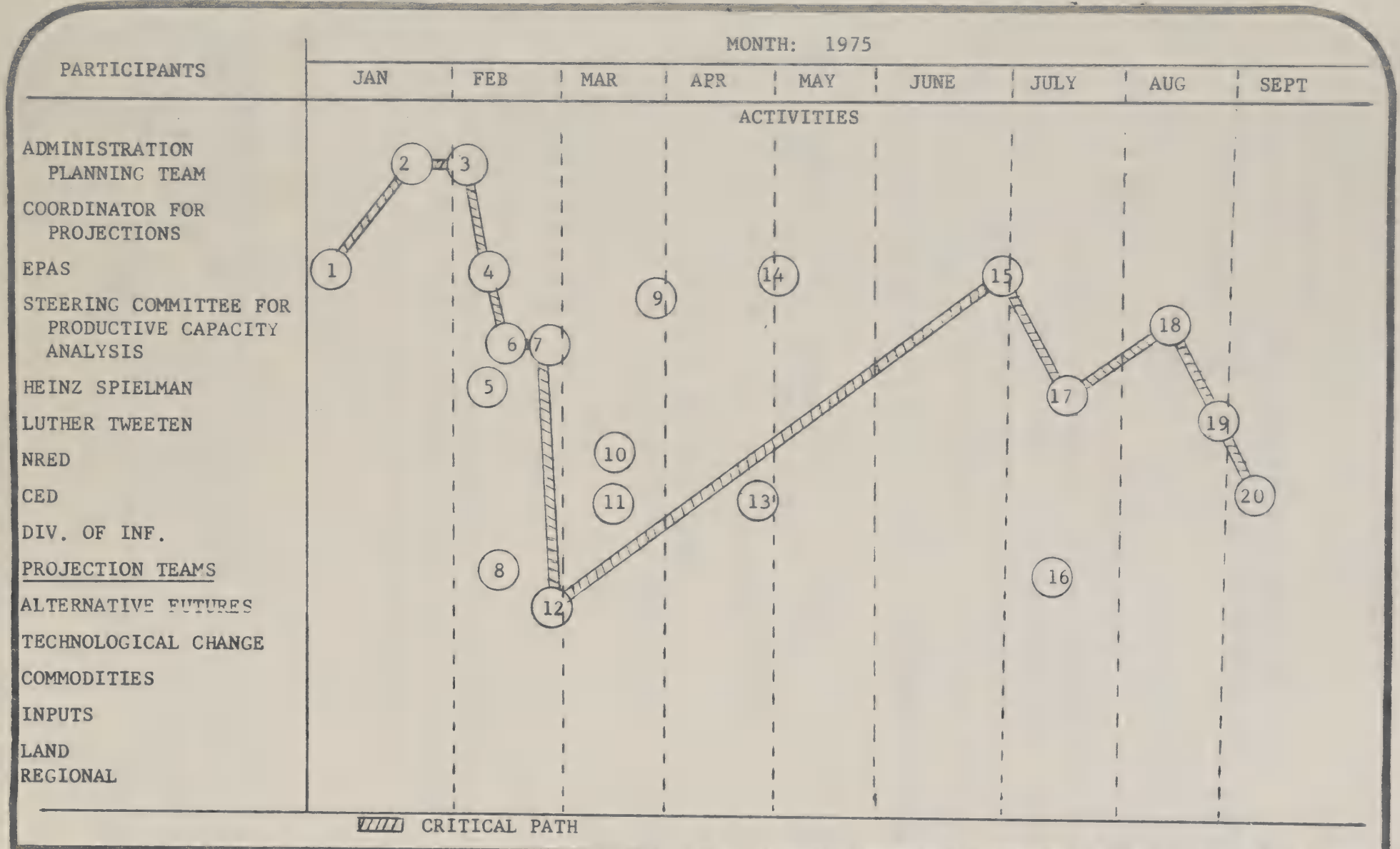
ECONOMIC PROJECTIONS PROGRAM

RESEARCH E R S PLANNING POLICY

TITLE:

ERS PRODUCTIVE CAPACITY RESEARCH STEERING COMMITTEE

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	18



ECONOMIC PROJECTIONS PROGRAM
RESEARCH E R S POLICY PLANNING

TITLE: GENERAL PLANNING EVALUATION AND REVIEW TECHNIQUE (PERT) CHART FOR THE PLANNED PRODUCTIVE CAPACITY ANALYSIS

SUBJECT: PRODUCTIVE CAPACITY

DATE: 1/30/75

ILLUSTRATION NO: 19

1. COORDINATOR FOR PROJECTIONS DEVELOPS PRELIMINARY PLANS FOR CONDUCTING PRODUCTIVE CAPACITY ANALYSIS
2. ADMINISTRATOR'S PLANNING TEAM MEETS TO REVIEW PRELIMINARY PLANS
3. ADMINISTRATOR'S PLANNING TEAM GIVES COORDINATOR FOR PROJECTIONS POLICY INSTRUCTIONS FOR REVISING PRELIMINARY PLANS
4. COORDINATOR FOR PROJECTIONS FINALIZES PLANS IN CONSULTATION WITH APPROPRIATE PERSONNEL
5. HEINZ SPIELMAN COMPLETES HIS REVIEW OF LITERATURE AND FINAL REPORT
6. ADMINISTRATOR ISSUES MEMORANDUM ESTABLISHING STEERING COMMITTEE
7. STEERING COMMITTEE MEETS TO REVIEW AND MAKE OPERATIONAL ADJUSTMENTS IN PERT CHART
8. NECESSARY ADDITIONAL PROJECTION TEAMS ARE ESTABLISHED
9. EPAS COMPLETES NECESSARY DEVELOPMENT OF NIRAP SYSTEM UNDER GUIDANCE OF APPROPRIATE PROJECTION TEAM
10. NRED COMPLETES ESTIMATES OF THE POTENTIAL FOR CONVERTING CNI LAND TO CROP USE, INCLUDING COST ESTIMATES
11. CED DEVELOPS PLANS FOR CONSTRAINTS ON LIVESTOCK PRODUCTIVE CAPACITY PROJECTIONS
12. ALTERNATIVE FUTURES PROJECTION TEAM AND STEERING COMMITTEE JOINTLY DEFINE PRODUCTIVE CAPACITY SUB-SCENARIOS
13. CED MAKES PRELIMINARY PROJECTIONS OF LIVESTOCK PRODUCTIVE CAPACITY CONSTRAINTS
14. EPAS TESTS NIRAP SYSTEM IN COMPLETING PROJECTIONS FOR THE RFF STUDY UNDER GUIDANCE OF APPROPRIATE PROJECTION TEAMS
15. EPAS STAFF, WORKING WITH THE STEERING COMMITTEE, GENERATES PRODUCTIVE CAPACITY PROJECTIONS
16. PRODUCTIVE CAPACITY PROJECTIONS ARE REVIEWED BY APPROPRIATE PROJECTION TEAMS AND REVISED AS REQUIRED
17. PRODUCTIVE CAPACITY ANALYSIS CONDUCTED AND PRELIMINARY REPORT PREPARED BY LUTHER TWEETEN
18. STEERING COMMITTEE MAKES FINAL REVIEW OF PRODUCTIVE CAPACITY ANALYSIS
19. USEABLE STAFF REPORT SUBMITTED TO ADMINISTRATOR ON SEPTEMBER 1, 1975
20. PUBLICATIONS PROCESS BEGUN BY DIVISION OF INFORMATION

ECONOMIC PROJECTIONS PROGRAM
RESEARCH E R S PLANNING POLICY

TITLE: PRELIMINARY PROGRAM EVALUATION AND REVIEW TECHNIQUES (PERT) ACTIVITIES FOR PRODUCTIVE CAPACITY ANALYSIS

SUBJECT:	DATE:	ILLUSTRATION NO:
PRODUCTIVE CAPACITY	1/30/75	20